

IN THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in the application:

1-91. (canceled)

92. (currently amended) A system for delivering brachytherapy to a target tissue region of the breast, comprising:

at least one elongate tubular member comprising proximal and distal ends and a lumen extending between an opening in the proximal end and the distal end ~~therebetween~~, the tubular member configured to be delivered along a first axis within the target tissue region;

one or more radiation sources receivable through the opening in the proximal end into ~~removably disposed within~~ the lumen of the tubular member after the distal end has been received within a target tissue region for delivering radiation therapy to the target tissue region along a second non-linear axis; and

a support member extending along and substantially fixed to a target therapy portion ~~between the proximal and distal ends~~ of the tubular member such that the support member is adjacent the one or more radiation sources when the one or more radiation sources are disposed within the target therapy portion, the support member shaped to bias the target therapy portion for advancement through tissue in a straight configuration and allow deployment to a curved configuration within the breast for delivery of radiation to the target tissue region lumen.

93-94. (canceled)

95. (previously presented) The system of claim 92, wherein the support member is enclosed within the at least one tubular member.

96. (previously presented) The system of claim 95, wherein the at least one tubular member comprises heat shrink tubing.

97. (previously presented) The system of claim 92, wherein the support member has curvature in its relaxed state.

98. (previously presented) The system of claim 92, wherein the support member is sufficiently flexible to permit curved implantation.

99. (previously presented) The system of claim 92, wherein the lumen of the at least one tubular member comprises a first lumen for receiving the one or more radiation sources therein, and the at least one tubular member comprises a second lumen containing the support member.

100. (canceled)

101. (previously presented) The system of claim 92, wherein the one or more radiation sources comprise a plurality of radioactive seeds spaced apart along the tubular member.

102-104. (canceled)

105. (previously presented) The system of claim 92, further comprising a plurality of additional elongate tubular members, each comprising proximal and distal ends, a lumen extending therebetween for receiving one or more radiation sources, and configured to be implanted along a non-linear axis within the target tissue region.

106. (previously presented) The system of claim 105, further comprising means for delivering the plurality of additional elongate therapy devices.

107. (currently amended) A system for delivering brachytherapy to a target tissue region within a breast, the system comprising a plurality of elongate therapy devices, each therapy device comprising:

an elongate tubular member comprising a proximal end, a distal end sized for introduction through tissue of a breast to a target tissue region, and a first lumen extending between an opening in the proximal end and the distal end; and

a support member extending along a therapy delivery portion of the tubular member outside the first lumen, the support member substantially fixed along the therapy delivery portion, the support member offset from the first lumen such that the therapy delivery portion is advanceable through tissue in a straight configuration and deployable to a curved configuration within the breast for delivery of radiation to the target tissue region, and

a tail portion extending from the therapy delivery portion such that the tail portion extends from the breast when the target delivery portion is introduced into the target tissue region of the breast, allowing a radiation source to be introduced into the first lumen of the tubular member through the opening in the proximal end for delivering radiation therapy to the target tissue region after the target delivery portion has been introduced into the target tissue region.

108. (previously presented) The system of claim 107, wherein each therapy delivery portion is configured in the curved configuration to provide conformance of the delivery portion to a shape of the target tissue region to be irradiated.

109. (previously presented) The system of claim 107, further comprising means for delivering the plurality of elongate therapy devices through tissue to the target tissue region.

110. (previously presented) The system of claim 109, wherein the means for delivering the plurality of elongate therapy devices comprises a plurality of tubular members for receiving respective therapy devices therethrough.

111-112. (canceled)

113. (currently amended) The system of claim 107, further comprising wherein each therapy delivery portion comprises one or more radiation sources introduceable into the first

lumen through the opening in the proximal end for delivering radiation to tissue adjacent the therapy delivery portion.

114. (currently amended) The system of claim 113 ~~[[107]]~~, wherein the one or more radiation sources comprise a plurality of radioactive seeds spaced apart along the therapy delivery portion.

115-148. (canceled)

149. (currently amended) A system for delivering radiation therapy to a target tissue region within a breast, comprising:

at least one therapy delivery element comprising a tubular member comprising a proximal end, a distal end sized for introduction through tissue of a breast to a target tissue region, and a first lumen extending between an opening in the proximal end and the distal end, the tubular member comprising a support member extending along and substantially fixed to a therapy delivery portion of the tubular member, the support member offset from the first lumen and between proximal and distal ends thereof constructed to cause bending in a predetermined, preferred plane of bending to provide conformance of the at least one therapy delivery element to the target region of the lumpectomy cavity to be irradiated; and

one or more radiation sources receivable through the opening in the proximal end of removably-carried by the tubular member into the first lumen after the target delivery portion has been introduced into the target tissue region.

150. (previously presented) The system of claim 149, wherein the therapy delivery element is constructed to curve within or around the target tissue region.

151. (canceled)

152. (currently amended) The system of claim 149 ~~[[151]]~~, wherein the support member comprises a metallic strip.

153. (canceled)

154. (currently amended) The system of claim 149 ~~[[151]]~~, wherein the support member is encased within the tubular member.

155. (currently amended) The system of claim 149 ~~[[151]]~~, wherein the tubular member comprises a first lumen for receiving the one or more radiation sources and a second lumen containing the support member.

156. (previously presented) The system of claim 149, wherein the tubular member comprises heat shrink tubing.

157. (previously presented) The system of claim 149, wherein the therapy delivery element assumes a repeating pattern of curvilinear pathways within or around the target tissue region when deployed at the target tissue region.

158. (previously presented) The system of claim 157, wherein the therapy delivery element curves within or around the target tissue region.

159-180. (canceled)

181. (currently amended) An implantable brachytherapy treatment system for treating a target tissue region within a breast, comprising:

at least one elongate tubular member comprising a proximal end, a distal end sized for introduction through tissue of a breast to a target tissue region, and a first lumen extending between an opening in the proximal end and the distal end ends; and

a support member extending along a therapy delivery portion between the proximal and distal ends of the tubular member outside the first lumen, the support member substantially fixed along the therapy delivery portion, the support member offset asymmetrically relative to the first lumen ~~configured~~ for delivering the tubular member through tissue in a straight configuration and deploying the target delivery portion ~~tubular member~~ in a curved configuration within or around the target tissue region; and

a radiation source receivable in the first lumen of the tubular member through the opening in the proximal end for delivering radiation therapy to the target tissue region in the curved configuration after the target delivery portion has been introduced into the target tissue region.

182. (previously presented) The system of claim 181, wherein the wherein the at least one tubular member comprises heat shrink tubing.

183. (currently amended) The system of claim 181, wherein the support member is enclosed within the tubular member along the therapy delivery portion.

184. (currently amended) The system of claim 181, wherein the tubular member comprises a second lumen extending along the therapy delivery portion ~~between the proximal and distal ends thereof~~ adjacent the first lumen, and wherein the support member is substantially fixed within ~~received in~~ the second lumen.

185. (previously presented) The system of claim 181, wherein the support member comprises a strip of material.

186. (previously presented) The system of claim 181, wherein the support member is configured for attenuating or shielding radiation to surrounding tissue.

187. (previously presented and withdrawn) The system of claim 181, wherein the support member has curvature in its relaxed state, the system further comprising a cannula for constraining the tubular member in the straight configuration for introduction through tissue.

188. (previously presented) The system of claim 181, wherein the radiation source comprises an afterload HDR cable.

189. (previously presented and withdrawn) The system of claim 181, wherein the support member has a flat cross-section.

190. (previously presented) The system of claim 181, comprising a plurality of tubular members including the at least one tubular member, the plurality of tubular members configured for simultaneous introduction through tissue of a breast to a target tissue region in a straight configuration and deployable in a curved configuration within or around the target tissue region.

191. (currently amended) An implantable brachytherapy treatment system for treating a target tissue region within a breast, comprising:

at least one elongate tubular member comprising a proximal end, a distal end sized for introduction through tissue of a breast to a target tissue region, and a first lumen extending between an opening in the proximal end and the distal end ends;

a strip of material extending along a therapy delivery portion between the proximal and distal ends of the tubular member within the tubular member adjacent the first lumen, the strip of

material substantially fixed along the therapy delivery portion and having a cross-section defining a width extending transversely relative to the first lumen and a height orthogonal to the width, the height being smaller than the width; and

a radiation source receivable in the first lumen of the tubular member for delivering radiation therapy to the target tissue region after the distal end of the tubular member has been introduced into the target tissue region,

wherein the support member biases the tubular member ~~is configured~~ for introduction through tissue in a straight configuration and deployment ~~deployable~~ in a curved configuration within or around the target tissue region.

192. (previously presented) The system of claim 191, wherein the wherein the at least one tubular member comprises heat shrink tubing.

193. (previously presented) The system of claim 191, wherein the strip of material is enclosed within the tubular member.

194. (currently amended) The system of claim 191, wherein the tubular member comprises a second lumen extending along the therapy delivery portion ~~between the proximal and distal ends thereof~~ adjacent the first lumen, and wherein the support member is substantially fixed within ~~received in~~ the second lumen.

195. (previously presented) The system of claim 191, wherein the support member is configured for attenuating or shielding radiation to surrounding tissue.

196. (previously presented and withdrawn) The system of claim 191, wherein the strip of material has curvature in its relaxed state, the system further comprising a cannula for constraining the tubular member in the straight configuration for introduction through tissue.

197. (previously presented) The system of claim 191, wherein the radiation source comprises an afterload HDR cable.

198. (previously presented and withdrawn) The system of claim 191, wherein the support member has a flat cross-section.

199. (previously presented) The system of claim 191, comprising a plurality of tubular members including the at least one tubular member, the plurality of tubular members configured for simultaneous introduction through tissue of a breast to a target tissue region in a straight configuration and deployable in a curved configuration within or around the target tissue region.

200. (previously presented) The system of claim 191, wherein the tubular member comprises a plastic co-extrusion.

201. (new) The system of claim 191, wherein the support member has an arcuate cross-section.

202. (new) The system of claim 201, wherein the support member is disposed adjacent the first lumen such that the width of the support member extends only partially around the first lumen.

203. (new) An implantable brachytherapy treatment system for treating a target tissue region within a breast, the system comprising a plurality of elongate therapy devices, each therapy device comprising:

a) a removably implantable elongate brachytherapy device comprising a therapy delivery portion and a flexible tail portion, the elongate brachytherapy device comprising:

i) an elongate tubular member comprising a proximal end, a distal end sized for introduction through tissue of a breast to a target tissue region, and a first lumen extending between an opening in the proximal end and the distal end ends; and

ii) a support member extending along the therapy delivery portion of the tubular member outside the first lumen, the support member substantially fixed along the therapy delivery portion, the support member shaped to bias the target therapy portion for advancement through tissue in a straight configuration and allow deployment to a curved configuration within the breast for delivery of radiation to the target tissue region; and

b) a radiation source receivable in the first lumen of the tubular member through the open proximal end for delivering radiation therapy to the target tissue region in the curved configuration after the tubular member has been introduced into the target tissue region.